# December 6, 2010 Market Watch

## January, 2011 Future Contracts

| | |
|---|---|
| **NYMEX Oil** | **$89.38/Bbl** |
| **NYMEX Gas** | **$4.44/mcf** |

## Gas Spot Closing 12/6/10

| | |
|---|---|
| **AECO** | **$4.06/mcf** |
| **Henry Hub** | **$4.49/mcf** |
| **NYMEX** | **$4.49/mcf** |

**BOE Factor: 3.796**

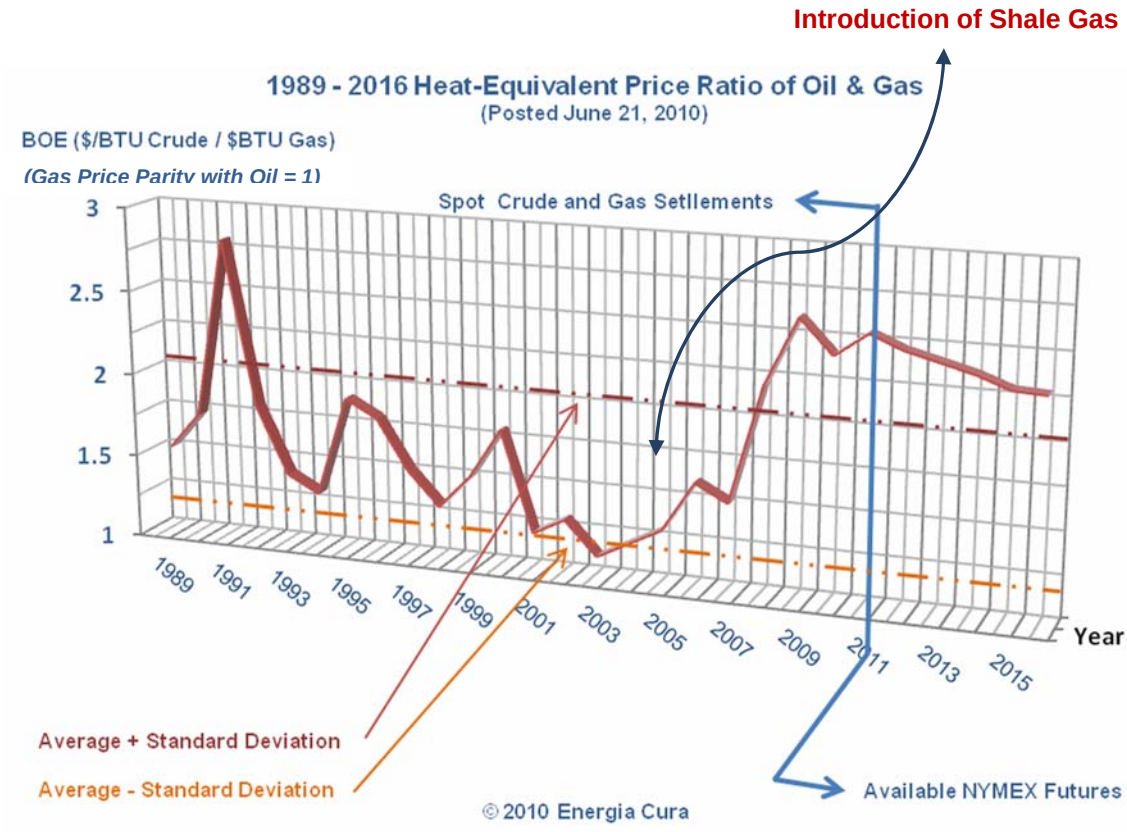
***(as marked AECO/NYMEX* closing on)**

**12/6/10**

## Oil Spot Closing 12/6/10

| | |
|---|---|
| **WTI Cushing** | **$89.38/Bbl** |

**Find an explanation of the BOE factor and the chart below in article 3 of this report**




Note that this chart was created on the close of markets on June 21, 2010. Energia Cura will update this chart in June, 2011 to show changes occurring in the new gas economies driven by increasing shale and global LNG developments. Analysts with an accurate history of projecting future markets estimate that the BOE may approach **4** within the next year. Today it is at 3.796. A gas pipeline allowing Alaskans to share in the benefit of these new gas economies is long overdue. Waiting 10 to 30 years for a large pipeline is a mistake that will be measured in the billions of dollars from Alaskan pockets (the avoidable costs on their post-taxed retained earnings).

# December, 2010 Market Watch

## 1 - Energy Cura Market Summary, December 6, 2010

In its August, 2010 short-term energy outlook, the EIA projected a full-year average gas price of $3.92/mcf – a full 30 cents less than its previous forecast. It also expected storage inventories to set a record by the end of the injection season, reaching 3.8 tcf by the end of October, topping the record set in 2007 by 235 bcf. Both of these projections have proven accurate. The lower 48-markets are awash in gas supplies today with more shale E&P ventures in permitting stage than this time last year.

There has been a 225% rise in gas-fired electric power generation capacity since 1996, while coal-fired generation has remained level. No significant nuclear and hydroelectric power capacity has been added in the same term. Renewable energy capacity, especially wind power, has risen during the past decade, but remains a relatively small part of the nation's total energy mix. In electric power generation, natural gas still affords the greatest opportunity for growth and increased market share. Therefore, say many analysts, the long-term outlook for natural gas to increase market share looks good, but in the short term, oversupply will lead to lower prices and further production cutbacks of conventional gas production.

California-based Chevron Corp., the world's fifth-largest oil company, issued a press release stating that it plans to acquire Atlas Energy for $3.2 billion in cash and assume a pro forma net debt of approximately $1.1 billion. The acquisition will provide Chevron with an attractive shale gas resource in southwestern Pennsylvania's Marcellus Shale. "This acquisition is the right opportunity for Chevron," said George L. Kirkland, Chevron vice chairman. "We are acquiring a company that has one of the premier acreage positions in the prolific Marcellus. The high quality resource, competitive cost structure in the Marcellus, strong growth potential of the asset base and its proximity to premier natural gas markets make this targeted acquisition a compelling investment for Chevron."

As we enter the New Year, price differentials between gas and crude sourced energy are projected to increase. Some leading analysts are predicting that BOE differentials may exceed 4 near Spring of 2011.

## 2 - Excerpt of the Month

**From the EIA Report Titled "Annual Energy Outlook 2010 with Projections to 2035"**

Shale gas and coal-bed methane make up 34 percent of total U.S. production in 2035, doubling their 17-percent share in 2008. Shale gas is the largest contributor to the growth in production, while production from coal-bed methane deposits remains relatively stable from 2008 to 2035. Advances in horizontal drilling and hydraulic fracturing techniques—as well as improved drill bits, steering systems, and instrumentation monitoring equipment—have contributed to higher success and recovery rates, reduced cycle times, lower costs, and shorter times required to bring new shale gas production to market.

Offshore natural gas, the bulk of which is from deep waters in the Gulf of Mexico, contributes significantly to domestic supply. Fields that started producing recently or are expected to start producing within the next few years include Great White, Norman, Shenzi, Tahiti, and Cascade. Production from the continued development of recent discoveries, as well as new discoveries, more than offsets production declines in older fields, resulting in a net increase in offshore production through 2035.

## 3 - Explanation of the BOE factor and to Interpret the Chart on Page One

BOE stands for barrel of oil equivalence. The BOE factor is used by industry and analysts to make simple comparisons of crude oil prices against those of other energy sources such as natural gas. While this factor is not that useful for retail consumers, its use by market analysts is universal.

Crude oil trades and is priced in $/Barrel, or $/Bbl. Natural gas trades and is priced in units of 1,000 cubic feet, or $/mcf. When customers buy natural gas or crude products (such as gasoline or heating oil), they are really buying these commodities to obtain their energy to heat buildings, generate electrical power, make chemicals, plastics, operate trains, boats, planes, cars, etc. To understand the real value of gas and crude, their energy content and price need to be related to a comparative unit. This is easier than it sounds – read on.

### 3 - Explanation of the BOE factor and to Interpret the Chart on Page One (cont.)

A barrel of oil contains (on average) about 5.8 times more energy than 1,000 cubic feet (or 1 mcf) of natural gas. Saying it another way, one thousand cubic feet of gas (1 mcf) contains about one million BTUs of heat and one barrel of crude oil contains about 5,800,000 BTUs of heat, both on average. Thus, the factor of 5.8 is an important number to remember when comparing the amount of heat (or energy) one gets when choosing to purchase either crude or gas. For example, if we could assume that the market price of one thousand cubic feet of natural gas was $1 while the market price of crude oil was $5.80/Bbl, then we could say that the price of the energy they both contain is at parity (or equal to each other).

Commodity prices for both crude and gas swing independently. This is not a big problem though. Let us take the market closing prices shown of the first page and see how we determined the 12/6/10 BOE factor. We see that crude closed at $89.38/Bbl on that day while gas closed at $4.06/mcf on the AECO hub (In Alberta - the closest hub to Alaska). If we divide $89.38/Bbl crude by 5.8, we see that one million BTUs from this crude costs $15.41 per million BTUs. Since one thousand cubic feet of natural gas coincidentally equals about one million BTUs and the markets closed that same day at $4.06/mcf (or million BTUS), the rest is easy. All we have to do is divide $15.41 by $4.06 to compare the energy value. $15.41/$4.06 = 3.796. This means that if you bought crude that day to fill your energy requirements, you will have paid 3.796 times more than if you would have bought gas (at a BOE of about 3.8).

This BOE shows only a part of the premium cost of energy that about one-third of our State's population faces every day. These are all our neighbors who are not served by natural gas directly and all those who purchase their electricity from utilities that need to burn crude products to make their power. This gets worse. As opposed to natural gas, which one can purchase and use directly, very few consumers can buy a barrel of crude to serve their energy requirements. They need to buy refined products because their boilers, furnaces and automobiles cannot run on crude oil. In reality, they have to purchase products made from crude oil that cost more than crude. Thus, to see the real picture, let us consider the retail price of gasoline, road diesel, and number two heating oil in Fairbanks today and compare that to $10/mcf natural gas than can be supplied by the FPC pipeline as shown below:

| | Price/Gallon | Price/Barrel | Price/million BTUs | |
|---|---|---|---|---|
| **Regular Gasoline** | $3.56/gallon | $149.52 | $31.20 | |
| **No.2 Heating Oil** | $3.66/gallon | $153.72 | $28.26 | **2.82 BOE** |
| **NYMEX Crude** | n/a | $89.38 | $15.41 | |
| **AECO Hub Gas** | n/a | n/a | $4.06 | **3.79 BOE** |
| **FPC Gas** | n/a | n/a | $10.00 | |

### 4 - FPC's Project Objectives and Benefits

Today, natural gas can only practically be used to fuel eighteen-wheelers. As a result, FPC gas will not provide a direct replacement in the foreseeable future for consumers' transportation fuels. Instead, by reducing the operating cost of Alaskan refineries using crude based fuels with FPC gas, it is expected that refiners will pass at least a portion of their process savings on to consumers. Because Interior Alaska's demographic has low population densities, the feasible outreach for natural gas distribution will most likely be limited to about four times the market now served by Fairbanks Natural Gas via their liquefied Cook Inlet gas. Their market today is less than 1 Bcf per year, so their gas distribution load represents less than 1/19$^{th}$ of the non-binding nominations received by FPC from Interior load centers to date.

### 4 - FPC's Project Objectives and Benefits (cont.)

When FNG reaches out to all the customers it can - ten years after the FPC system provides the additional supplies they cannot get from the Cook Inlet today to increase their market - the Interior's gas distribution network will be able to grow to 4/23rds, or about 1/6$^{th}$ of FPC's total gas volumes. In the same decade, it's conceivable that the population growth in the Interior will increase the density of loads within FNG's gas distribution system, so their proportion of gas volumes may grow to 6/26ths or to about 1/4$^{th}$ of FPC's entire gas volumes. The question now becomes; how can other residents living beyond the feasible outreach of FNG's present and future gas distribution system benefit from FPC's $10/mcf gas? The multi-faceted answer to this question is provided below.

1) Through their electric meters
2) Through their Permanent Fund Dividend Check
3) Through dividends received from FPC if they invest in the company
4) Through socio-economic improvements wrought from the increase in the local Velocity of Monies
5) Through removal of barriers to entry now facing any new energy-intensive enterprise in Alaska

1) GVEA's residential power cost today is about $0.20/kWh. They have claimed in past publications that the fuel needed to generate the power they sell represents about 50% of this cost. The cost of their fuel today is about $20/million BTUs. This is double the cost of FPC's gas priced at $10/million BTUs. As a result, they could lower their cost of power at least 20% by just substituting their current naphtha utilization with ½ cost FPC gas. Since they augment their generated power by importing 73 mW of power from the Cook Inlet, adding another gas turbine onto their North Pole Plant can reduce their cost of power by close to 50% once FPC gas is available in 2014.

   Alaskans need to understand that GVEA's current power rate includes the payment of debt service for the North Pole Plant. When completed in 2007, GVEA burdened its ratepayers with its debt service for not only working generation capacity, but also unused capacity. This plant is a combined cycle plant, meaning that there is a steam cycle installed to generate power from the gas turbine's exhaust. What most people do not know is that when built, the steam cycle in this plant was sized to permit the economic addition of another gas turbine in the future. The plant's buildings, steam piping, pumps, condenser and steam turbine are sized to easily accept another gas turbine. This unused investment did not come cheap. The back end (steam cycle) of this plant cost about four times that of the gas turbine's capacity to install. Today, half of this investment is going unused while GVEAs ratepayers pay for it through their rates. The addition of another gas turbine burning $10/mcf FPC gas at its existing North Pole Plant can produce power far cheaper than the alternatives GVEA is now considering. This includes both the addition of wind power capacity and the Healy Clean Coal Project that it **may try** to make commercially viable. FPC is currently working with GVEA's Board to resolve this issue as soon as possible.

2) Unlike other gas developments that have been ongoing in the State for over thirty years, FPC has not requested subsidies. Instead, it has offered the State an equity (ownership) position in FPC commensurate with their participation including provision of easements (not leases) along their highway corridors to install FPC's pipeline along these roads and sharing geological and geophysical data required to design the pipeline. Most of this publicly funded data is already in place today, so costs the State virtually nothing.

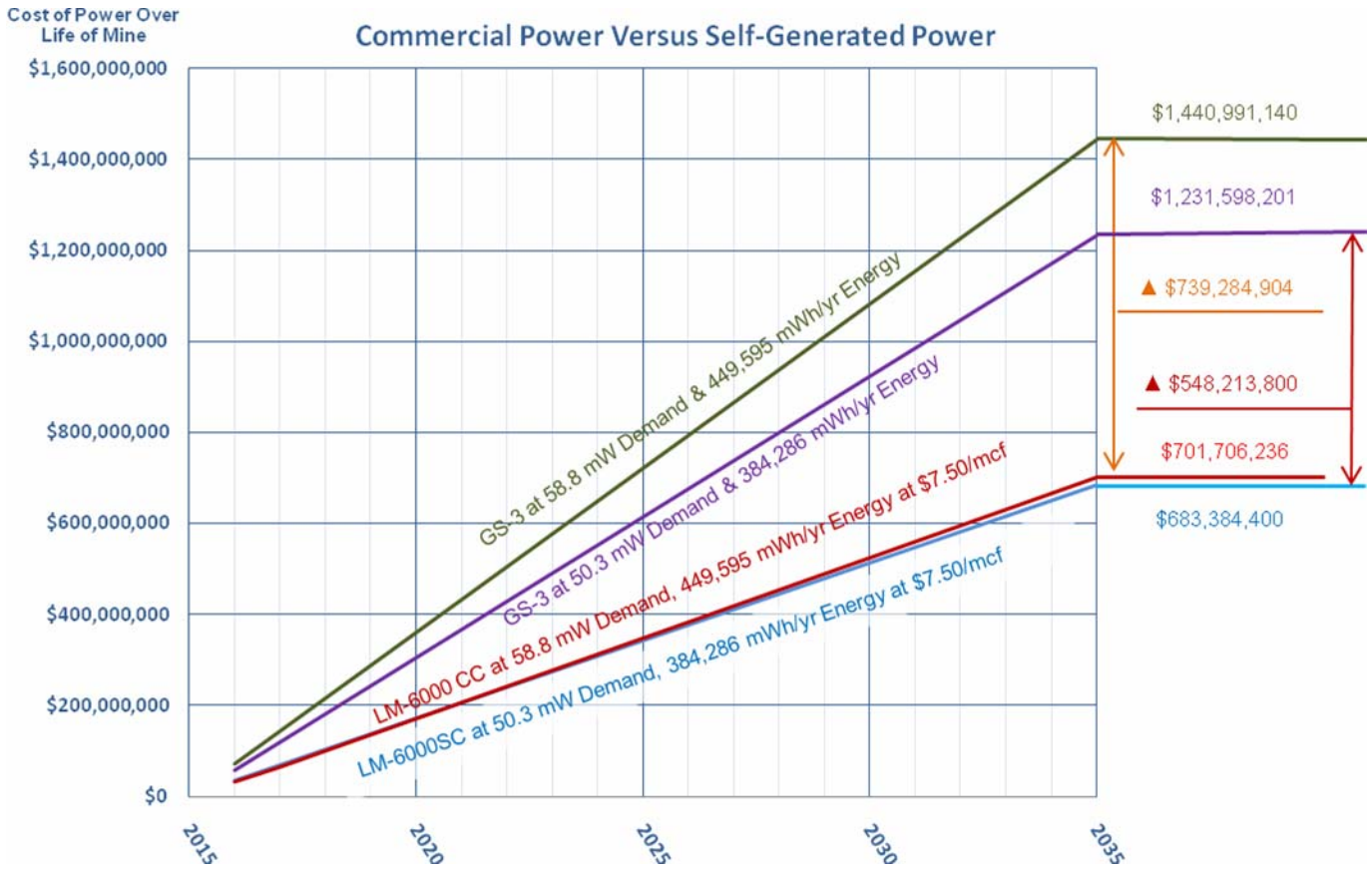
   FPC has suggested to the State that both its equity and future earnings assignments from its participation in the gas pipeline project be placed into the PF (Permanent Fund). Why? Because this concept and plan is at once: **Practical -** The Alaska Permanent Fund Corporation is already well equipped to purchase (or simply accept) and manage equity instruments as it does today. **Possible -** Governor Parnell noted in this year's State of the State Address that our budget reserves are sufficient to "suspend the gas tax for two years" and cushion the State's operations "for at least the next 10 years". If Alaska can afford to give multinational corporations this type of break on gas royalties, it can certainly afford to put a portion of this wealth into its citizens' pockets, since most do not have a ten-year reserve in their household budgets. **Purposeful -** We believe that all Alaskans, not just those in the Interior, should benefit from Alaska's own use of its gas resources. No better way than through the PF and through FPC's Tier I (Interior load centers) and Tier II (any Alaskan resident) offers for ownership.

3) FPC's developments on its organization include either going public or issuing shares in a private limited liability partnership corporation. Either way, securing equity in FPC's business will allow Alaskans to invest in a low-risk utility model offering close to a 14% rate of return. In today's economy, this is an attractive rate of return for investors whose retirements are now invested in Wall Street's distraught and questionable casinos.

### 4 - FPC's Project Objectives and Benefits (cont.)

4) The VOM (velocity of monies) is an econometric term used to quantify how additional monies circulating in a local economy compound. FPC's gas will save Alaskan consumers $3.54 billion over twenty years. If these monies are contained within local circulation, they add enterprise and jobs, compounding the principle value through the additional trade energized by this increased wealth in the community in which it circulates. The compounding factor varies between large urban and smaller population centers. In Alaska, the compounding effect is approximately 1.5 over twenty years. This means that the additional $3.54 billion added to local circulation will increase in value to about $5.31 billion over twenty years. By any standard, this is a serious improvement to Alaska's prosperity.

5) FPC's self-supporting business model lowers the barriers to entry for prospective In-State investments such as for a new proposed gold mine. Energia Cura recently completed a power source study for this mine. As demonstrated in the chart below from its report, affordable In-State deliveries of ANS gas would lower this mine's energy costs by about $3/4 billion over its 20-year life. As echoed within the improvements to the velocity of monies in item 4 above, this mine will add jobs and monies within our State, collaterally adding more enterprises and employment by these enterprises to support their operations. See Chart below:




**How to interpret this chart -** This mine's opportunity to avoid costs of $739 million over its 20-year life is based on their emplacement of a LM-6000 CC (Combined Brayton and Rankine Cycles) power plant at the mine to generate their own power instead of buying it from GVEA. The charts show the differential cost between self generating 58.8 mW at 90% CF (capacity factor) burning $7.50/mcf gas versus the cost of purchasing equivalent power from GVEA (including the burden of capital repayment and the operating costs for the transmission lines required to connect to GVEA's system). Also shown is the cost differential ($548 million) for the mine installing a LM-6000 SC (Simple Brayton Cycle) power plant rated at 50.3 mW capacity, 90% CF also burning FPC gas supplied at $7.50/mcf. GS-3 refers to GVEA's applicable industrial rate they would charge this mine. The addition of gas nominations by GVEA, Alyeska Pipeline, and Eielson AFB can reduce FPC's current projected gas price from $10/mcf to $7.50/mcf.